Description of the Module

Khoto, Pula, Nala! (Peace, Rain, Prosperity!)—the national motto of Lesotho and a greeting used everyday by the Basotho—is an appropriate greeting to visitors to the Water in Africa Web site. It reflects the deep connection of water to all aspects of life in African countries—a concept we have tried to capture in over 600 photos, hundreds of anecdotes, and 24 learning units found on this site. The Water in Africa site encourages educators to teach geography, language arts, reading, art, and technology in a meaningful way by using authentic original materials collected from Peace Corps Volunteers serving in African countries.

The URL of the Module

The Water in Africa learning module is part of Peace Corps Web site and is included in the World Wise Schools' section of the site. The URL is http://www.peacecorps.gov/wws/water/africa

The First Year

In May 1999, Peace Corps' World Wise Schools (WWS) received notice that we had been awarded an grant of $50,000 under an "Invitation to Federal Agencies and Federal Organizations to Submit Proposals to Develop Internet-Based Learning Modules and Communities" from the Innovation Technology Fund, located at the General Services Administration and coordinated by the Department of Education. This grant was to implement a plan that had been developed with a $5,000 award the previous year. A Memorandum of Understanding between World Wise Schools and the Department of Education was signed. The following timeline chronicles the work of the year of implementation.

May 1999

Team members were chosen for what was soon called the "WIA" project. Members included people who dealt directly with water issues in African countries, the Peace Corps webmaster and staff members from World Wise Schools, including the writer/editor and the education technology specialists. At the end of May the selection process began for the teacher members of the team. An invitation was sent to the approximately 6,500 educators who were already connected with Peace Corps through the WWS community or the Fellows U.S.A. program.

Peace Corps staff members devised a budget that included funding for stipends, professional development materials, and in-service training for the teacher members of the team. The budget also included resources for film and ballpoint pens to be sent to Peace Corps Volunteers in 25 African countries, consultant fees, and hardware and software necessities.

We invited Ritz Camera to join in a partnership with us, and Mr. Charles Ritz, the CEO of Ritz Camera generously contributed $1,000 toward the purchase and processing of film. In addition, Peace Corps contributed funds for printing, videotapes, and the salary for a co-op student to assist with the project.

June, 1999

Through a careful process, over 50 applications were reviewed and seven teachers were selected to be part of the team. These team members each signed a contract to work with WWS to each create, revise, and pilot test four learning units. Another seven teachers

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were contracted to review and test the learning units created by team members and step in as alternates should they be needed. The teachers on the team included:

Elementary Teacher	David Glennon *	6th Grade, Westmont, NJ
Elementary Teacher	Robert Maher	4th Grade, Coolville, OH
Elementary Teacher	Kristi Rennebohm-Franz	1st Grade, Pullman, WA
Middle School Teacher	Michelle Abernathy-Tabor	6th Grade, Bellingham, WA
Middle School Teacher	Amy Cohen	(On sabbatical) Philadelphia, PA
High School Teacher	Karen Bockman *	Geography, Baton Rouge, LA
High School Teacher	David McKoski **	Art and Chinese, Chicago, IL
High School Teacher	Carly Garrett	ESL, Chula Vista, CA
Gifted Education	Dany Ray **	Cairo, GA

*Teacher was unable to continue after January.
**Teacher replacement

The teacher members of the team were invited to attend an in-service training at the end of July in Washington, DC at Peace Corps headquarters. Planning for the proceedings and the logistics of the in-service commenced. Professional development videotapes were purchased to loan to the teachers. They included one on a curriculum design technique called *Understanding by Design*, one called *Teaching and Learning with the Internet*, and a third *Raising Achievement Through Standards*. The McRel CD-ROM, *Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education*, Grant Wiggins book, *Understanding by Design*, and posters of national standards were purchased for each of the teachers on the team.

WWS staff members began to prepare 250 Water Experience Team (WET) kits to send to 25 African countries. The kit consisted of a roll of film, a ball point pen (inscribed with *Peace Corps/World Wise Schools/Connecting PCVs to Educators)*, writing prompts, a photo log, hints for good photos, samples of all the documents, and a letter to the Volunteer who received the kit.

The Project Director met with the Africa Regional Director and all the Africa Region staff to inform them of the project and gain support for it. E-mails were sent to the 25 Country Directors informing them to expect the arrival of the WET kits.

July 1999

Ten WET kits were sent by diplomatic pouch to each African country where Peace Corps Volunteers serve.

A forum for threaded discussion was set up using *Caucus* through The Meta Network at www.tmn.com. The members allowed to use this electronic sharing included all the teacher members and Peace Corps staff members who were working on the project.

On July 29th and 30th the seven teacher members gathered at Peace Corps headquarters in Washington for in-service and team building sessions. The agenda included briefings on government paperwork, writing standards-based lesson plans, understanding cultural differences, the Volunteer experience as it related to water in African countries, and how

to use the *Caucus* threaded discussion system. The teachers departed with a notebook of orientation and briefing materials, the CD-ROM, posters, and the curriculum design book.

August 1999

The teachers began to create their first learning units based on resources already available on the Peace Corps Web site. They also began to experiment with communicating through the *Caucus* system:

29-AUG-1999 23:10 Kristi Rennebohm Franz Hello Everyone!
It was great to meet all of you as we gathered together in D.C. for our first meeting. I'm honored to be a part of this team and look forward to all we can learn together. During August it was inspiring to review all the materials for this project and begin working on lessons plans. Thank you to all the World Wise School staff who have put this project together.

I am now back home in Pullman, Washington with our first week of school behind us. Despite 98 degree temperatures on the playground and very, very warm classrooms, it was a great start to school. Water was immediately a valued resource on our first school days because of the thirst created by the dry heat of our Eastern Washington August The heat is compounded by an abundance of dust from wheat harvest which is presently in full gear in the rolling hills surrounding our town. Each child was given his/her own water bottle and the two children assigned each day to be "classroom helpers" were kept plenty busy refilling them for their classmates. How lucky these children are that the source of clean water is as close as the classroom sink! This real phenomena of dry heat is a terrific lead-in to our Peace Corps lessons in which our enduring goal is to develop understandings and appreciation for water as a valued resource.

September 1999

The Project Director devised a detailed system to track the submissions from Volunteers. The first five completed WET kits arrived from Africa and were numbered and processed. The film was taken to be developed, and the Volunteers' stories were transcribed.

Rough drafts of the first learning units arrived from several of the teachers. They were reviewed and sent back to the teachers.

We contracted for Web hosting to act as a development site for the *Water in Africa* (WIA) project. The site was password protected to avoid it being discovered by search engines, yet it was accessible to the teachers who would use it to collect the resources upon which to base their learning units.

New items for discussion appeared on *Caucus*. Discussions included comments about the professional development videos that were being sent around among the teachers, confusion about the first learning unit, contact information, and proposed conference calls. An example of an entry comes from a consultant to the WIA project from George Mason University. Kevin played a constructive teaching role in the threaded discussion as evidenced by this comment:

08-SEP-1999 17:11 Kevin Ruess
I'd like both to thank Michelle for asking questions that probably many were wondering about and to support Maureen in her responses regarding links to external Web sites
.
The WWW is by its nature a medium that encourages wandering through discovery of new paths and by following suggestions. Although this is a strength while you are exploring, it can be detrimental when you are

writing content that serves a specific purpose for a particular audience. Lesson plans pretty much fall in this category.

That said, the fact that you are all writing for the Peace Corps Web site means that some organizational concerns will necessarily guide what you can do, even if conforming to the parameters means you have to omit something that might be very valuable. I'd like to point out that linking to external Web sites is actually considered good design because it increases the users' trust in the Web site as a source of information--the authors have enough confidence in their own content that they believe you will return. You come to believe in their referrals when external links are few and well chosen.

October 1999

By the end of October, a total of 20 WET kits had been returned to Peace Corps headquarters.

Teachers seemed to be having difficulty with the learning units, and only two were submitted during this month. To assist them in talking through the problems and giving some live feedback, conference calls were planned and initiated. Three calls were made, all at times convenient for the teachers. In all, twelve people participated in the conversations that seemed to help clear the air and get the units back into production.

November 1999

Sixty-six WET kits had been returned to Peace Corps by the end of November representing 13 of the 25 countries where they had been sent, and the initial photos and stories from the Volunteers in Lesotho and Madagascar were prepared for the development site.

The National Geographic Society was contacted regarding the use of their maps on the Water in Africa site. They granted permission for us to place their Xpeditions maps (GIF images and PDF files) on our site.

In mid-November, the Project Director began planning for a second in-service to be held on Presidents' Day weekend. A discussion item was started on Caucus to confirm the dates, and to discuss the agenda for the meeting.

The Project Director and the WWS Education Technology Specialist began to design the structure of WIA Web site based on the initial ideas from the planning grant from the previous year. The development site mirrored the lowest level pages of the WIA site where the resources would exist.

Teachers began to pilot their first units and share their reflections about how the lessons progressed in the classrooms. After this pilot testing, the teachers then revised their plans based upon what they had experienced. This first reflection, as posted on *Caucus* by Amy Cohen, a Junior High Teacher from Philadelphia, shows the mutual learning experience that can occur between teachers and their students:

16-NOV-1999 10:58 Amy Cohen
"How do culture and geography affect what people eat?" is the unit's essential question. To answer this question, students compare eating habits in the United States to eating habits in Africa (as reported by Volunteers). Once they gain an understanding of the predominance of staple foods in African diets (the Volunteer Views vignettes emphasize how one basic food is eaten virtually every day and at every meal), student teams create newsletters about a staple food. Although I had written the lesson with middle class, assimilated American students in mind, I piloted it for a group of inner-city ESOL students from Vietnam, China, Puerto Rico, Haiti, and Ivory Coast. This presented both challenges and opportunities. The main challenge was that I wanted to contrast variety and reliance on fast/convenience foods in the American diet with

uniformity and absence of fast/convenience foods in the African (especially rural African) diet. But there I was with a group of students, many of whom eat rice every day and at every meal. This, obviously, made it more difficult to underscore difference between the US and Africa. In order to illustrate the diversity of eating habits in the US, even if almost every kid had eaten rice for dinner, I elicited from the students the different ways in which their rice was prepared, what its accompaniments were, and how it was eaten. I also asked what each student had eaten for breakfast which ranged from fried rice to Spanish eggs to waffles (interestingly enough, not a cereal eater in the group).

Another interesting aspect of teaching this particular lesson to this particular group of students was that their comments allowed us to explore ways that culture/geography affect eating habits from a perspective I had not anticipated. Many of the students shared that they eat "American food" from time to time, but that their parents or grandparents rarely or never do. This discussion of how CHANGING one's geographical location and cultural milieu affect what one eats went beyond what I had envisioned when developing the lesson.

One more experience to share: at the end of the ninety minutes I spent with these students, I had them do a written reflection about how geography and culture affect what they eat. Because they aren't my own students and because their mechanical skills are weak, I tried to really focus on the CONTENT of what they wrote. I am not accustomed to divorcing style from content in this way. This experience, I hope, will help me as I attempt to create a rubric which will assess the written reflection assessment in terms of understanding of the lesson's content objectives rather than language arts skills (the newsletter component of the lesson has a heavy language arts emphasis).

December 1999

Our original plan was to have each learning unit piloted by its creator and then again by one of our alternate teachers. Although the concept was good, the logistics of making these arrangements were extremely difficult, and only a few plans were tested twice. Dany Ray, a teacher of gifted students in Cairo, Georgia, piloted Amy Cohen's lesson that she described above, and added her comments on *Caucus*:

07-DEC-1999 10:10 Dany Ray
The class and I are right in the middle of Amy's unit. So far we have spent two days (45 minutes each day) on the lesson. We will conclude the week of Dec. 20th. I have added a few adaptations to the lesson to accommodate my teaching style and my kids learning styles.

In between the lessons from this unit my students went to the Internet to Peace Corps' Kids World. We also used the WWS Destination: Lesotho video to highlight the geography of Africa and where staple foods were growing in Africa. I plan to mail the best newsletters to Amy along with more feedback. This is an excellent lesson. It will be a valuable asset to the total curriculum.

Several of the teachers used their holiday breaks to get a start using the resources posted on the development site. Others revised their units based on suggestions made by the Project Director, and resubmitted them as final products.

January 2000

Final plans were set for the February in-service. Logistics such as flights, hotel and meals were arranged.

Photos and stories from two more countries—Guinea and Ghana—were posted on the development Web site.

At the end of January a total of 81 WET kits had been returned to Peace Corps from Africa.

On *Caucus*, a discussion of the development of evaluation rubrics for the learning units continued from a discussion that started in November:

11-JAN-2000 14:09 Amy Cohen
Although this rubric discussion has gotten quite lofty and sophisticated, I wanted to share a very simple and down to earth piece on using rubrics which is posted on the Middleweb Web site. I particularly like the section "How Do You Create Rubrics?" which goes through seven steps to using student-created rubrics.
http://www.middleweb.com/rubricsHG.html

12-JAN-2000 7:38 Dany Ray
Thanks Amy for your comments on rubrics. I use and develop rubrics with my students. Reading through the team members' ideas on rubrics and development began to shake my educational foundation, to "I don't know a thing" and "whom am I trying to fool". No amount of research displaces the classroom experience when developing "good" curriculum. Now I am off my soap box and I'm ready jump right into the next exciting lessons that all of you have developed.

February 2000

During the third quarter two of the teachers dropped out of the project. Because they did so prior to the winter in-service, their replacements, former teacher alternates, were able to participate in the in-service and get a good start on their work.

The two and a half day in-service was held on the Presidents' Day weekend at Peace Corps Headquarters in Washington DC, beginning Thursday evening, February 17th, and running through Saturday, February 19th. The agenda, written using the learning unit template that we expected the teachers to use, was centered on these three essential questions: How can we help each other? How can we write units usable to a wide audience? How can we use backward design to create exciting learning units based on the WIA resources?

The goals of the in-service were to give the participants an opportunity to share their work, give feedback to other teachers, to create a list of new ideas for learning units, and begin to write another learning unit. By the end of the in-service the participants had renewed their bonds as a team, had some excellent ideas for new standards based lessons, had a better understanding of a backward design process, and had feedback on the unit they were beginning to create. In addition, two returned Volunteers who worked in water sanitation in several countries in Africa delivered a presentation about water sanitation equipment and their use within several African cultures.

The teachers were asked to reflect on the winter in-service at two points during the two and a half days using the threaded discussion tool, *Caucus*. The final evaluation asked them to reflect on the essential questions the in-service posed.

Michelle Abernathy-Tabor wrote:
A strength of this in-service has been the opportunity to really try to put backward design into practice. I am learning, however, that starting with an enduring understanding/essential question and a final product, is a fluid process... We have certainly helped each other---technically, philosophically, and practically.

I don't think we directly confronted the question about the wide audience, but David and Carly's stories about their students were vivid enough to give me a sense of what classrooms can be like on a daily basis in places very different from the suburb where I have done most of my teaching.

Kristi Rennebohm-Franz (unable to attend in-service) reviewed the reflections about it and wrote:

Just wanted to add a comment about tools: this Caucus tool is terrific...the technology that connects! Thanks everyone for sharing what's been happening these few days.

March 2000

By the end of March a total of 86 WET kits had been returned to Peace Corps headquarters. This represented the bulk of the responses from Africa. Photos and stories from 10 of the countries had been processed and were posted on the development site for the teachers to use.

The teachers began to work in earnest on their learning units with the goal of completing them and testing them in their classrooms before the end of the year. It appeared as if the second in-service training had both renewed their excitement about the project and their self-confidence as curriculum writers. A month after the in-service, Amy Cohen reflected on another unit she created:

19-MAR-2000 21:45 Amy Cohen
It was interesting for me to develop and implement an interdisciplinary lesson in which my weakest area, math, became a focal point. I was dismayed by the students' weak math skills, but glad, I suppose, to give them an opportunity to practice using math in an applied way. Although there are certainly revisions I would like to make, I could tell that the students did indeed start thinking differently about water and appreciating their own easy access to running water which was the point of the lesson.

April 2000

Thirteen learning units, over half of the total, were submitted for review at Peace Corps by the end of the third quarter. Seven of them had been pilot tested in the author's classroom, and two of them were additionally tested in other classrooms. The majority of the learning units were submitted after the winter in-service.

By the end of the third quarter, a statement of work had been written for a graphic designer to provide us with an appropriate design for the home page and five secondary pages, and the request for quotes had been sent to six design firms. Our plan was to have the site designed and begin to use the design on the development Web site by June 1st so the teacher members could give us feedback about it. WWS contributed $2,000 for the design, and the grant funds covered the remaining cost.

More units were piloted and reflections about the process of developing the units with students were shared on *Caucus*:

19-APR-2000 0:51 Michelle Abernathy-Tabor
We are just completing our pilot of Madagascar Adventure. I say "our" pilot because my class has been instrumental in helping to make this unit its best. I used a simulation format for this unit where students are invited to join lemur researchers on Madagascar with the goal of answering the big question, "How can the natural resources of Madagascar (rainforest and water)be both used and preserved in a way that benefits both the lemurs and the people of Madagascar?" Students were excited to get started and many went home and researched the lemurs that night. We brainstormed about what we would need for such a trip as well as what we might collect/write/illustrate to put in our final product--a scrapbook--to show evidence of our learning. I connected students to the Peace Corps site (Madagascar Environment/Agriculture Stories and Daily Usage Stories) and they took notes about water usage, differences between daily water routines in the U.S. and Madagascar so they would know what to expect, etc. It was around the third of fourth day that we discovered that our goals weren't quite connecting. One student

approached me and said that it was getting too complex to try and tie everything in. I had been doing a lot of thinking about our progress thus far and had come to the same conclusion. I was excited to brainstorm with students about how to resolve this. After we discussed it, I listed the cycle I envisioned on the board. It became clear that water was a definite important connection, but by spreading students too thin, we had missed the real way in which water connects to the unit. We got side-tracked on daily usage and we got a little side-tracked on lemurs. I refocused, ran off copies of only the environmental/agriculture stories and then as a class we read the stories and highlighted just the parts which contained references to natural water sources: sediment-filled rivers, erosion, streams drying up, silted rice fields from flooding rivers, etc. It quickly became clear that you couldn't discuss deforestation without discussing its effects on water.

May 2000

The Project Director and the Education Technology Specialist from WWS worked with the graphic designer throughout the month on the designs for the top level pages of the *WIA* Web site. The designer suggested several revisions to our navigational structure that added new depth, and more complexity to the Web site. By the end of the month the design was completely drafted and final revisions were being discussed.

The Connection, the WWS quarterly newsletter was published and distributed to 30,000 WWS participants both overseas and in the United States. The lead article was about technology featuring the *WIA* project.

Learning units that had been piloted and revised were reviewed by Peace Corps staff and returned to teachers for their final revisions. Several teachers who had summer plans to go abroad with Fulbright-Hays grants worked at completing their contractual agreements with Peace Corps (four completed units) before the end of the school year.

June 2000

The *Peace Corps Bulletin*, a newsletter for former Volunteers and friends of the Peace Corps, was published and distributed to over 150,000 former Volunteers in the United States. It contained an article and photo about the *WIA* project and mentioned that any former Volunteer who would like to contribute information should contact the Project Director. As a result of this article, a former Volunteer working in the Office of Ground Water and Drinking Water, contacted the Project Director and collaborated on one of the learning units involving measures to ensure the safety of drinking water.

The Peace Corps Webmaster approved the graphic design of the WIA Web site, and the design was finalized. A statement of work was written for a programmer to code all the country level pages.

Two of the teachers who had not submitted any of their units used the summer vacation to compose the units that they had previously outlined and piloted in their classrooms. An influx of learning units was received at Peace Corps, and a corresponding number of reflections appeared in the threaded discussion. An example follows.

27-JUN-2000 23:06 David McKoski
This is a reflection on my second unit that I taught in my art class. I have taught 4 units and will be responding on each unit during the next few days as I finish the final touches on each unit. This lesson focused on the visual arts and was a lesson looking at photographs and how the 3-dimensional visual world is communicating in a 2-dimensional image. I wanted students to think about what the photo was about and not merely what was in the photo. I wanted students to ask: What message is the photo communicating? Is that message the true story or is the photo manipulating or limiting the truth?

In this lesson students manipulated photographs from the WIA Web site and other sources by cutting, reassembling, and adding 2-dimensional materials such as text, maps, documents, notes, drawings. Using the Volunteers' essays as background resource information, students created a photomontage that focused the viewers attention or altered the viewer's attitudes regarding environmental issues in the U.S. and Africa.

The lesson was complex and required students to read and collect information, compare and contrast, and really think about what they were putting on paper. I wanted my students to understand how contemporary works of art are created. They need to understand that art also requires research. The lesson was taught during the last few weeks of school and this had a negative impact on the final product.

When completing a montage or collage (3-dimensional) it helps the students when pre-selected pictures are provided. Students should not spend a great deal of time searching, but should use this time to select quality from a given selection.

This lesson required showing students examples of work. Therefore, a teacher must be willing to find resources. There are numerous resources on the Web and I even found books in the school library. If my school has the books I think most schools will have something.

The lesson also requires organization. I created five handouts that I found helpful to move the students from one step to the next. The lesson could be taught without the handouts but the handouts help students organize their work and thoughts and see how things build upon one another. Hopefully this carries over into other classes.

The Project Director reviewed learning units and sent them back for final revision to the authors. She then prepared the final revisions for the WWS Writer/Editor to review and edit.

July 2000

WWS donated funds to hire a temporary assistant to complete the photo processing and the editing of captions from the remaining countries and enter them into a database. The assistant also completed research for the factual items on the WIA Web site and elicited quotations from Volunteers for each of the country pages.

A programmer was hired and completed the HTML formatting of all the country level pages. The WWS Educational Technology Specialist developed a style guide for the Web site and began to use the graphic design to complete the formatting of the remaining pages.

The graphic designer was hired to create design for a bookmark that would be used for marketing the WIA learning module.

August 2000

The *Peace Corps Times*, a publication that is sent out to all 7,000 currently serving Peace Corps Volunteers, included an article about the WIA project.

The Project Director conducted an Internet search for diagrams of water catchment devices, pumps, and wells, and contacted the Food and Agriculture Organization of the United Nations and Humboldt State University in California for permission to use the diagrams posted on their sites.

The processing of all photo resources was completed. Over 600 photos and a corresponding number of thumbnails were readied for the WIA Web site from the 90 rolls of film that were sent from African countries.

The WWS Writer/Editor and the Project Director continued revising and editing the teachers' final learning units.

September 2000

The Project Director wrote the introductory text for all the top level pages on the site, created student project pages, and developed forms for the Community section so that teachers and volunteers could continue to contribute to the site after its launch.

The WWS Education Technology Specialist coded all the remaining pages of the *WIA* Web site. During the initial phases of the process, he conducted user testing which helped identify navigation, labeling, and content issues prior to creating the over 700 individual pages of the finished site. Careful attention had been given to structure and navigation issues prior to generating the design and basic structure of the site. This included working with over 20 educators and many individuals with expertise in the education and Web design/development field. The user testing was conducted in phases:

Phase One – Preliminary Testing (Structure and Navigation) – September 12-15, 2000
Six users were tested individually on a series of navigational tasks. Testing was done with all top-level pages and on complete content for one country. For the most part users had little problems finding content. Several navigation problems and a structural problem were identified.

Phase Two – Intermediate Testing (Structure and Navigation) – September 18-21, 2000
Five users were tested after problems discovered in the preliminary testing were corrected and other minor issues were identified. Modifications made as a result of previous testing eliminated the problems in the second testing. The main user issue that remained in the second testing was rectified and plans were developed for a third phase of user testing for content, structure and navigation.

The Immediate Future

A group of 10 users (teachers and others in the educational community) will meet on September 29 to provide a final check on navigation and to review the site's content. This final stage is focused primarily on the content of the site. Many of the individuals involved are heavily involved in issues and topics about Africa.

The Peace Corps Webmaster and the Communications Department will review the entire development site. When their approval has been given on the style and content, the WIA site will be moved to the Peace Corps Web site.

The bookmark will be finalized and printed for distribution to all of the participants in WWS, the teachers in the Fellows USA program, Africa Region staff members, and at major educational conferences during the school year.

The WWS Marketing Coordinator and the Project Director will devise a plan to advertise the WIA project.

The WIA project with all it's lesson plans will be put into the GEM database and receive GEM coding.

The Value of the Module and Community

Although the topic of water issues in Africa seems immediately relevant in geography and social studies curriculum, the WIA units cover many areas of the curriculum with integrated units. National Standards in both the primary subject area and the secondary subject are supported in 24 WIA units:

Level	Primary Subject Area	Secondary Subject Area
Four Elementary	Geography	Language Arts
Four Elementary	Language Arts	Geography, Social Studies, or Visual Arts
Three Elementary (Primary)	Reading	
One Elementary	Math	Geography
One Elementary	Science	Geography
Four Middle School	Geography	Language Arts, Technology Integration, or Health
Two Middle School	Language	Geography or Technology Integration
Three High School	Visual Arts	Language Arts
One High School	Geography	Language Arts
One High School	Language Arts	
One High School	Science	Health

The teachers who worked on the WIA project were asked to use a threaded discussion tool, *Caucus* throughout the project. Of the 38 discussion items on *Caucus*, the item about pilot testing learning units had the most entries at 68. As the teachers discussed their work, they revealed the usefulness of their units within the school curriculum, the value of the resources offered by the WIA project, and the reaction of their students to authentic learning experiences. Some of their comments are grouped in these categories below:

Usefulness of the WIA Learning Units Within the School Curriculum

Carly Garrett, a high school English as a Second Language (ESL) teacher reflected on her language arts unit:

I teach a class of mixed-ability level ESL students at a continuation high school I spend a lot of class time doing grammar and verb tenses, so I was looking forward to teaching proverbs. Proverbs are an important component of fluenc. They not only express the values of a culture, but they are frequently used in conversation to express ideas. If someone doesn't know the proverbs and idioms of a language, they are not fully fluent in the cultural currency of that language.

Robert Maher, a fourth grade teacher tested a different unit on proverbs and wrote:

Values and character education are both important concepts in public education today, and this unit addressed them by helping students consider how, why, and from whom they receive values. The unit is a good starting point for a more in-depth exploration of a particular place in Africa, and also stands alone as a tool to learn about African nations mentioned in the Web site.

Michelle Abernathy-Tabor, a sixth grade middle school teacher discussed her language arts unit on poetry:

My inspiration for this unit came after reading some of the beautiful writing under Water and Culture. I focused on the most age appropriate sites with some of the most descriptive and varied passages: Mauritania, Cape Verde Islands, and Morocco. I knew I wanted to do something with these descriptive passages and, as I wrote, the unit evolved. I settled on the idea of poetry. Perhaps I can best explain the final product by sharing a student example. Try to "hear" it being read in two alternating voices--the Volunteer's first and the original text in parentheses in a different voice. The following sample was written by Tyler using the story we're all familiar with by Beth Giebus. Sentences from Beth's story are first, Tyler's first person original text follows in parentheses.

"Everything alive was made from water," reads a passage from the Koran.
(My existence depends on the abundance of water.)
Street vendors and storytellers, acrobats and snake tamers, bearded ulmans and veiled Berber binats-all drift to the tides of its drumbeats and the breathy rush of its flutes.
(The whole city has suddenly come alive.)
With three buckets of hot water and one bucket of ice water, we scrubbed and scoured.
(Will this wash away my misfortunes?)
Looking down at the sisal mitt, I couldn't help examining the dirt I never knew I had.
(Look at all this dirt and grime!)
Water is not a focal point in religious ceremonies, except as part of mandatory absolution before prayer.
(Allah, let this washing cleanse my soul!)

Another value of this learning module is the way in which the learning units integrate several curricular areas. Dany Ray, a teacher of gifted students, described a middle school group of students working on her unit:

Bringing Water to a Lesotho Village is a simulation, for grades 6-12 that I wrote and piloted with my seventh graders. They got really excited about the concept of being members of a village and being responsible for selecting, designing, and creating a water supply system for their village. Students used graphic organizers to organize the tasks in the village. We found the National Geographic maps helpful throughout the data collection and research process. The kids were able to access them on their computers as they worked. The most exciting part of the lesson was facilitating the students as the village water groups reviewed data, illustrations, and background reading, and then began discussing the geography of the land, the tools available, and the materials needed. When the groups got ready to put the final design on paper, they asked if they could make it three-dimensional instead of just two-dimensional. So out came the clay and straws, and before I knew it a whole village emerged along with a cement cistern, and pipe laid up into the hills to catch water from the spring. The final presentation had each group jockeying for approval of their water supply system.

David McKoski, a high school art teacher described the integration of research skills into his art unit on photomontages:

This lesson focused on the visual arts and was a lesson looking at photographs and how the three-dimensional visual world is communicated in a two-dimensional image. The lesson was complex and required students to read and collect information, compare and contrast, and really think about what they were putting on paper. I wanted my students to understand how contemporary works of art are created. They need to understand that art also requires research.

Before students decided upon the subject of their photo collage they completed research on the Web site and also in their community. A comparison chart was created and a conclusion was generated from the information regarding environmental (water) issues in Africa and/or US. The conclusion was the subject of the photomontage.

Although the lesson concentrated on the visual arts I think students used skills that cross over into other areas. Hopefully, the next time they look at photos they will take a closer look at the message as well as the content.

Several teachers commented on the rubrics they had created as part of the evaluation of learning in their units, for example, Kristi Rennebohm-Franz, a primary teacher, commented:

I have again added writing rubrics for assessment specifically for the national standards on writing with the idea that these are checklist rubrics to assess how children are making progress towards achieving those standards.

I liked working with the assessment categories of With No Assistance With Some Assistance Unable to Articulate, because it provides more of a continuum sense of progress rather than a numerical score or simple yes/no. This is developmentally appropriate for primary students. As teachers of primary students, we are having to learn how to do assessments in ways that honor the reality that these young children are just getting started on developing their skills and we want to affirm what efforts they make in that direction. There ended up being a lot of assessment in the category of With Some Assistance for the first and second graders in my class and that seemed appropriate.

The Resources Available on the WIA Site

All of the teachers commented on the value of the photo and textual resources available on the *WIA* site. These resources are available to the universe of learners that visit the site and become part of our learning community either by using the resources or by adding to them. A sampling of their comments follows:

Kristi Rennebohm-Franz commented on the photos:

The class especially liked the images! These are such powerful conveyors of information and experiences to children. They had lots of comments about them.

According to Amy Cohen:

Working with the photos was wonderful. I started the lesson with the photo of a locked well in Lesotho and had them guess what was being locked up. This was followed by several photos of women collecting, hauling, and waiting for water. The students were very interested in where the photos came from--they wanted to know how I had access to them, so it was fun to tell them about the project.

Michelle Abernathy-Tabor remarked on the Volunteer's written contributions:

This week I finished piloting a lesson based on the Tanzania folktale "The Hare and the Water." When I read the story online (Tanzania: Water and Culture) I was excited to find that the story had been told from beginning to end, not just referenced. I also thought that it begged to be illustrated and even extended.

To get across the relevance of the folktale to African culture, I had students search the Peace Corps Web site (Tanzania and other countries) for pictures showing people working together to find or gather water. The importance of collaboration and working together to find, preserve, and use water became very apparent.

Dany Ray summed up the feelings about the resources in the reflection she wrote about her lesson, Water Safari, a Journey of Life:

The valuable information, data, and soul of the Volunteers' photographs and views jumped out at me almost daily. Every time I accessed the site, I was entranced. I would just have to sit, read, and view the site by myself without the usual school interruptions. I wanted to capture this feeling and perhaps integrate it as part of the lesson, then get students to write freely, creatively, and personally about what they had been feeling as they viewed the site. I wanted them to be able to see what I saw--that water pulls us all together, that it's the great natural equalizer.

Authentic Learning

When teachers and students use the resources and the units on the WIA site, they will be treated to authentic learning, direct from the "real" world. Some comments from teachers giving their own reactions as well as their students follows.

13-APR-2000 19:10 Carly Garrett

I piloted my third lesson this week. Basically I focused on water usage. I began by talking about some water-related facts, for example that 10,000,000 people die every year from water-related illness. The kids got into that discussion. It was really fun. That night they reflected on what they learned. The next day we looked at water usage facts and made bar graphs to show the disparity in usage between the U.S. and other countries in the world. That was a nice way to integrate math, and it shocked them even more. We are lucky to have so many students who were born in Mexico; they had a greater understanding of water usage, telling stories from personal experience of hauling water, not bathing so much, getting sick, etc.

30-JUN-2000 19:26 Kristi Rennebohm Franz

I have done the "Carrying Your Own Water" lesson with other classes in previous years and know that it is a powerful lesson for children to comprehend the process/challenges of gathering water from a local open water source. And with that experience preceding the viewing of images, they can more personally connect with the experiences of carrying water shown in the images... often being in awe of what children in other places are able to do with balancing loads and taking such big responsibilities for helping their families. Too often children today in

our community have not had experiences of helping at home. This changes their attitudes. They become more willing to help and take on challenges.

03-JUL-2000 16:35 Robert Maher
In mid-May, I taught a unit on how water affects children's lives in the United States, Kenya, and Tanzania. It was a language arts unit which covered comparing and contrasting--a part of the fourth grade curriculum. We started by discussing water-related activities in our region and how they impact our daily lives in term of quality, quantity, and time spent. I had the students fill out a "water log" for one 24-hour period so they could compare experiences. Some students had chores such as watering the garden or giving the cows water, which took a fair amount of time. One student was buying water at the grocery store and bringing it home because the water at their rental property wasn't safe to use. We discussed how these activities helped define the culture of our region. Then we used the WIA Web site to look at villages in Kenya and Tanzania. They used a research graphic organizer to help them find similarities and differences in children's experiences as compared to our region.

Plans for Next Steps in the Project

The Community section of the WIA Web site is focused on how people can contribute to the project, or comment on it. It is geared to three different audiences: teachers, returned Peace Corps Volunteers, and students. Each of these groups are urged to comment on the Web site by e-mail. These comments will be compiled and posted on the site in an archive. Since the site will be widely advertised, many comments are expected.

Teachers and Volunteers are also invited to contribute to the project. The writing prompts that were sent overseas in the WET kits were transformed into a rich text form (RTF) that can be saved on one's own computer and then completed and e-mailed to WWS. Likewise, the template for the learning units that was presented to the teachers on the team has been re-written as a form so that educators who would like to contribute a new lesson or adapt an existing one will have that opportunity.

Samples of student work from some of the units posted on the WIA site are also contained in the Community section. Students are given suggestions on how to complete projects of their own, use them for school, and let us know about them.

The long-term plans for continuing and/or expanding the project are not firmly set. Since the end of the Project Director's term at Peace Corps is simultaneous to the launch of the site, there is no one person committed to it. Nevertheless, possibilities for continuation include collecting photos and vignettes about water (or a different environmental issue) from other regions of the world, including shorter lesson plans instead of week long units, and expanding the student portion of the site.

Lessons Learned About Developing an Internet-Based Learning Module

Many lessons were learned by creating this learning module. The list that follows is no doubt incomplete because everyone's perspective has not been addressed. An attempt has been made to put the lessons into the categories of time, personnel, and technology.

Time

- We started out this project with a concept and some basic plans that were drafted by the planning team from the previous year. We had none of our primary resources, and no teacher team. Due to superhuman efforts, we managed to create the Water in Africa Web site in about 14 months. In a situation such as ours, the development period should have been two years. The first year should have been devoted to procuring the resources, getting them ready for the teachers to use, and training the teachers in our preferred curriculum development method. The second year could have been dedicated in full to creating the learning units and developing the Web site.

- Not only does everything take longer than you expect, but also the delays in developing the module may not have anything to do with developing the content. Delays may be totally unavoidable, such as the contracting personnel for the federal organization being on vacation when an offer needs to be made to a contractor.

- Beginning the project in May was very disadvantageous. It was difficult to gather the team and get them oriented to the process before the next school year began. When their first attempts at learning units were not completely successful, it was difficult to consult with them because they were already involved in the activities of the beginning of a school year.

Agency Personnel

- It is impossible to estimate how much time the agency personnel must devote to the project if it has never been done before. Our estimation was completely inaccurate. It would have been ideal to have two full time people, both education technology savvy, devoted entirely to the project plus at least one dedicated administrative assistant.

Educators

- Do not expect teachers to have the time or the desire to engage in learning a totally new process for developing units on their own. The first in-service we had should have been longer and we should have spent days rather than a couple of hours on how to create a unit correlating essential questions, standards, and assessments.

- Excellent teachers with wonderful ideas are not necessarily gifted writers. A corollary is that even the best application process used to find teachers does not identify all the skills necessary to develop good learning units.

- Give teachers who are creating units generous stipends, but remind them they are under contract. Be extremely specific in giving them revision directions, and be just as specific in giving them the praise they deserve for creating exciting lessons.

- Educators learn best from each other. Allow them to air their grievances about the process and the vagrancies of the government bureaucracy, and offer their criticisms of the design model you want to use. Let them discuss these matters and give each other feedback both in threaded discussions and in face-to-face encounters.

- If at all possible, bring the teachers back to the agency for an official launch of the Web site. If that is not possible, be sure to give them their due acclaim and the ability to promote their work—they will, after all, be promoting the mission of your agency.

Using Technology to Create Community

- Use as much technology as you can. We used books, videos, threaded discussions, telephone calls, e-mail, fax, regular mail, video-conferencing, and face-to-face encounters. The most beneficial in terms of professional development seemed to be the face-to-face in-service training and the threaded discussions on *Caucus*. We would have been totally lost without e-mail. None of the learning units would have been in an acceptable form.

Funding from the Consortium for Education

The funding WWS received from the Consortium for Education allowed us to give stipends and professional development materials to seven educators from around the United States. It also allowed us to bring them to Washington DC for two in-service trainings and house them while they were here. Further, it paid for the *Caucus* system so that they could communicate with each other. The total dollar amount that was spent on the educators was 76% of the entire grant, or $36,645.49. The remaining money was spent on supplies and services to gather the resources from Volunteers in Africa, to design and to develop the WIA Web site, and to host it on an independent network. A total of $11,376.65 was spent on services and supplies. The details of this accounting can be found on the accompanying spreadsheet.

In-Kind Activities and Their Dollar Value

Our original proposal included an estimate of the in-kind contributions that we expected to make to the WIA project that amounted to $42,600. The actual contributions in staff time alone were more than double that amount. The chart below details the in-kind donations from Peace Corps in terms of salary:

WWS Personnel	Approximate Time	Approximate Value
Project Leader	85% of work time	$61,710
Education Technology Specialist	40% of work time	$25,000
Writer/Editor	25% of work time	$12,500
Co-op Student	100% of work time	$1,020
Temporary Assistant	100% of work time	$2,400
TOTAL		$102,630

In addition to the salaries of employees, WWS also donated part of its budget to supplies and services. The printing costs for the materials that were sent overseas, and the bookmark, and videotapes totaled $5173, bringing the **total value of in-kind contributions from WWS to $107,803**. To put this into perspective, it must be understood that to hire an independent instructional designer (Project Leader) and programmer (Educational Technology Specialist) for the same amount of time would have cost approximately $195,000 at a rate of $75 per hour. The dollar value of the WIA project in the commercial world would be a minimum of more than twice the amount that it cost WWS to create.

Contributions were made to this project from other areas as well. Ritz Camera donated $1,000 toward film processing. Renaissance Media, the graphic design firm, donated over 20 hours of unpaid time to the design process, equaling approximately $2,000. National Geographic Society allowed us to post their Xpedition maps on our Web site, the Food and Agriculture Organization of the United Nations and the Campus Center for Appropriate Technology at Humboldt State University in California allowed us to post their diagrams on our site. No dollar amount can be placed on these generous gestures.